Compliance Measurement Cooperative Agreement with EPA Region III

Introduction:

MDE has received a $100,000 grant from EPA's OECA (administered by Region III) to "develop statistical methodologies for collecting valid samples for inspections and calculating associated compliance rates for sectors and ultimately arriving at a method for measuring facility performance."
The project should take three years and be completed without hiring an outside contractor. There will be four tasks described and completed as follows:

Task 1: A team of MDE enforcement and compliance supervisors with statistical backgrounds and/or good computer skills will develop a general formula which can be implemented using MDE's present information technology capabilities. The formula will:

A. Define what constitutes a statistically recognizable universe of facilities

B. Identify what constitutes a valid representative sample size

C. Create a system for random selection of the representative samples

D. Establish a template for a "standard compliance rate inspection" report

E. Based on the standard compliance rate inspection report template, develop a rating system by which the compliance status of individual facilities can be rated and tracked.

Task 2: MDE's Enforcement and Compliance Workgroup will select one or more compliance programs or facility sectors to pilot the "standard compliance rate inspection" protocol. The requirements for the selection of the pilot will be that the affected compliance program can

Accomplish the required number of inspections within the given time period

Obtain EPA Region III's approval to deviate from preexisting grant requirements if necessary to complete the necessary inspections, or in the alternative get credit from EPA Region III for conducting the necessary inspections

Task 3: The selected compliance program and media administration will define the "total" universe for the compliance rate study and reduce that definition to writing. Each facility in the total universe will be assigned an identifying number (the number can be a pre-existing number if one exists) and a standard compliance rate inspection report form will be created. If existing inspection report forms satisfy the template requirements, then existing forms can be used, It is important however that the forms used for "compliance rate inspections" be distinguishable from other inspection report forms.

Task 4: The significant random sample of facilities will then be inspected during the fiscal year using the compliance rate inspection reports. The results of those inspections will be tabulated quarterly during the reporting period. A "compliance rate" for the narrowly defined universe of facilities will be calculated by the compliance program for the entire fiscal year. The compliance program, in conjunction with the Enforcement Workgroup and the Office of Enforcement Coordination will review the product and process of the first year's pilot effort and make any appropriate changes. The pilot will then be repeated in at least one subsequent reporting period.

Timetable:

Tasks one, two, and three (producing the inspection protocol) will be completed by the end of the first year. Task four, (actually conducting the "compliance rate" inspections) will be completed in the second and third years of the study.

OECA Performance Measures Grant
For Cooperative Agreements with States
The State of Maryland's Pre-Proposal

I. BACKGROUND

In 1997 the Maryland General Assembly enacted legislation which required the Maryland Department of the Environment (MDE) to report certain enforcement statistics on an annual basis. In response to this requirement MDE set up an Enforcement and Compliance Workgroup, composed of representatives from the enforcement and compliance programs of each of the three major media administrations, to begin compiling the information to produce the report. This effort also had full support of the Secretary's office, the Attorney General's Office, and MDE's technical and public relations staff. The workgroup quickly recognized that the information the legislature asked the Department to provide would create an incomplete picture of MDE's work. Furthermore, MDE understood that what the legislators and the citizens they represent really wanted was a meaningful accounting of the relative success or failure of the Department's regulatory enforcement efforts. Thus began MDE's "Measures of Success" initiative.

The workgroup set out to develop a consistent set of measures across all media lines by which the public could gauge how successful our efforts had been. Three years and two reports later the workgroup continues to develop and further refine MDE's performance measures. The workgroup remains as a highly visible, core performance management infrastructure in the Department. What follows is a brief summation of where we have been, so that you can fully appreciate what we are working on now, and where we are going.

The Need for a Consistent Vocabulary

Our earliest attempt at bringing structure to our statistics involved overcoming the substantial hurdle of diverse nomenclature. We recognized that although the process of regulatory enforcement is not as complicated as "rocket science" it certainly seemed that way because of all the different terms, acronyms, reporting requirements, and enforcement tools available. In trying to frame the questions which would generate the data allowing us to measure a program's performance, we discovered that although the programs' enforcement activities were similar, each program had developed a unique vocabulary by which it described those activities. For example, most programs employ an enforcement tool known as a "notice of violation" (NOV) but the programs apply the term NOV to different enforcement tools. For some programs a NOV is the very first document which a facility receives concerning a violation. Other programs use documents called reports of observation and other tools before issuing what they call a NOV. For these programs, the NOV is the last straw in the enforcement arsenal. Simply comparing numbers of NOVs would create the misleading impression that one

program was doing more work than another program which employs the NOV later in the enforcement process.

General Description of the Process

In seeking a consistent vocabulary we recognized that although you couldn't compare the names of enforcement tools you could measure the number of times you engaged in a particular enforcement activity. The first significant step and cornerstone of our effort was to develop a flowchart describing our enforcement process in general terms applicable to all programs.

Through the exercise of creating a general enforcement process flow chart, we identified that our compliance programs fall into two different general categories. First, programs that deal with permitted discharges. Second programs that are responsible for regulating site/facility maintenance. We developed two sets of definitions for these two categories, creating two different "Measures of Success" charts.

Identifying Significant Violations

The next hurdle we encountered was the need to classify the different types of violations we handle. This was the beginning of moving beyond the mere counting of activity (outputs) into counting outcomes, or the results of the activity.

We recognized that not all violations are equal. There is a distinction between significant violations and minor violations. So the problem became how does an agency define significant in a manner which is consistent across all media and yet which is not so rigid as to create absurd results.

In response to this problem we created a system of violation classification which distinguishes between 4 different violation categories, then 2 different violation types, and finally a set of seven factors which determine whether a violation is significant or not.

The effort was further complicated by the differing definitions of what was required to be reported under the law and the actual definitions used in the programs.

First Two Enforcement and Compliance Reports for FY 1997 & 1998

Having established a set of definitions upon which our programs could agree, we collected our statistics and published the Enforcement and Compliance Report for 1997. Although it was a good first effort, the two sets of definitions and subtle distinctions between the way the two different types of programs interpreted their numbers proved to be confusing and required us to use many footnotes to explain the relationship between the numbers. Therefore, a substantial amount of time and effort was spent in the second year devising a single chart format and set of definitions which would be transparent on their face and continue to meet our reporting requirements (not requiring

a lot of footnotes to clarify relationships). The Enforcement Workgroup's efforts resulted in the 1998 Enforcement and Compliance Report looking very different from the 1997 Report. The 1998 Report included not only the 1998 output, compliance assistance and compliance rate numbers, but it also employed graphs to show how the 1998 numbers compared to 1997. Thus, the reader could see that the system of measurement had remained the same even though the format had been altered to make the numbers more easily understood.

Enforcement Performance Measures Tied to Other MDE Initiatives

This "Measures of Success" initiative is tied directly to MDE's performance measurement management systems. First, the measures are used as part of the Managing Maryland for Results effort. This is a process required by Maryland's Governor in which all state executive agencies must undergo a total quality management and strategic planning assessment of their operations and come up with bench marks and measures by which the work of the agency can be supported and strategic planning be done. In many respects, Managing Maryland for Results (MFR) is similar to the Government Performance and Results Act (GPRA). Attached (under separate cover) to this pre-proposal is a copy of MDE's Managing Maryland for Results Year 2000 Work Plan.

Also, Maryland has entered into a Performance Partnership Agreement (PPA) with EPA Region III and the Maryland Department of Natural Resources. This document includes nine environmental goals that are each supported by environmental indicators, and an annual work plan to support meeting the goals. The PPA reflects the work of Managing for Results and is a subset of work directly lined to our relationship with EPA.

All three of these efforts, namely 1) the annual Enforcement and Compliance Report for the General Assembly, 2) Managing Maryland for Results Work Plan for the Governor's office, and 3) Environmental Performance Partnership Agreement with EPA Region III are in their third year of development. We are preparing our third Enforcement Report and our state budget for this year will present performance data under Managing Maryland for Results. We have two signed Environmental Performance Partnership Agreements (1998 & 1999) and are working on the agreement for the year 2000/2001-budget cycle.

With this amount of preliminary work already done, MDE feels we are substantially on the way to having a credible statistical baseline against which to measure the performance of our future endeavors.

II. WORK PLAN AND PROPOSED ACTIVITIES

MDE is developing a comprehensive system of measures for Maryland's enforcement and compliance assurance programs as a whole.

MDE is committed to developing a comprehensive system of performance measures for Maryland's enforcement and compliance assurance program as a whole. Examples of the measures will be provided below, and the entire set of measures is presented in the MFR Year 2000 Workplan. In order for this initial set of measures to function accurately and establish a credible set of statistics, more work and refinement of the measures is needed. This effort involves mobilizing the entire agency simultaneously on three fronts. First, the work of developing the next level of performance measures to provide greater statistical reliability must go forward. In creating the initial measures, we recognized that the data could be further refined to provide more statistically valid conclusions. Second, the agency is designing and implementing an "enterprise" database to support the collection and assimilation of the data required by the performance measures. Essentially, this is the process of ending our reliance on multiple, different databases and pulling all the information together into one system. Finally, we need to continue to collect and analyze the data for this year without the assistance of the database.

1. Developing performance measures is an ongoing process. Over the next several years, we are going to be developing a more statistically valid way to identify compliance rates.

   The 1998 Enforcement and Compliance Report calculated compliance rates by dividing the number of facilities with significant violations into the number of inspected facilities. While this was the best we could do for now, the universe of inspected facilities is not really representative of all the facilities in the state because we often inspect facilities where we have information which indicates that the facility is not in compliance. It would be more statistically valid to inspect a random sampling of facilities in a given universe (or sector) and calculate the compliance rate based on violations found within that random sample.

   The next step will be to devise a system for evaluating the compliance status of an individual facility. We ultimately hope to arrive at criteria to objectively identify facilities that are exemplary, those which meet expectations, and those that are recalcitrant or consistently fail to comply. It follows that our outcome measurement would involve counting how many facilities fall into each category and measure programmatic success by the number of facilities moving up or down the scale. Because of the diversity of programs and facilities it is no small task to develop criteria which cross the various media. In our ongoing

discussions we may have to move towards a sector approach rather than a programmatic approach.

We practice a systematic method for developing performance measures. The workgroup initially discusses a proposed measure or set of measures. Then we get feedback from the programs and our stakeholders in order to build a consensus as to the measure's effectiveness. We are maintaining an archive of how the measures have changed and evolved over time. Our goal is to develop this improved performance measurement methodology for reporting in FY 2001.

2. Building the database...this is a big task. We hope to have most of our compliance programs operating out of the single enterprise database system within three years. Obviously this task involves creating the new database and making the transition from multiple, program-specific, databases to one department-wide system. If requested, we can provide copies of documentation for the database's supporting tables, which incorporate fields for capturing the performance measure data described above. For example, the plan is to have the inspector simply identify the regulation that has been violated and the database will automatically fill in the fields that identify the violation type and category. We have already begun the process of developing business flow charts, regulation lists and gathering of all forms. These efforts are in preparation of awarding a contract to develop, design and implement MDE's enterprise system, and are the cornerstone of re-development efforts that are directly tied to EPA's One Stop Program and the Department's Information Technology Strategic Plan. The attached system requirements provide a summary of the objectives of the enterprise system and its goals to: 1) build accountability; 2) increase efficiency; 3) improve the quality of our data; 4) standardize our environmental performance management across programs; and 5) increase public access to and the utility of our data. It is the Department's intent to begin system analysis in June 1999.

3. Gathering and assimilating the data in a meaningful way until the enterprise database completed is the final step in our workplan. While the preceding two developmental fronts are going forward, MDE remains committed to producing the annual Enforcement Report and satisfying the MFR Work Plan.

A summary review of the Enforcement Report and the MFR Workplan reveals that MDE is committed to developing and establishing a comprehensive system of measures that are compatible and comparable to the EPA and ECOS systems described in the request for proposals. What follows is a brief summary of the measures we have developed

MFR Goals and measures:

Goal 1 -- Ensuring the Air is Safe to Breathe
Goal 2 -- Ensuring that Marylanders are not Exposed to Unnecessary Levels of Radiation
Goal 3 -- Ensuring Safe Drinking Water

Goal 4 -- Reducing the Threat to Public Health from the Presence of Hazardous Waste and Hazardous Materials in the Environment
Goal 5 -- Ensuring Water is Clean and Safe for Harvesting of Fish and Shellfish
Goal 6 -- Improving and Protecting Maryland's Water Quality
Goal 7 – Ensuring Adequate Protection and Restoration of Maryland's Wetland Resources
Goal 8 -- Protecting and Maintaining Maryland's Natural Resource Land Base and Encourage Smart Growth and Community Revitalization
Goal 9 – Preventing Pollution and Compliance Assistance

MDE's progress or performance towards achieving each of these goals is tracked by a set of:

- **Environmental Indicators (outcome measures)**
- **Other Outcome Measures**
- **Input Measures**
- **Output Measures**
- **Quality Measures**
- **Efficiency Measures**

For example, these are the performance measures associated with Goal 1:

Goal 1 -- Ensuring the Air is Safe to Breathe

Outcome measures (environmental indicators)

- Percentage of Maryland population living in areas meeting air quality standards.
- Ambient concentrations or exceedences of 6 criteria pollutants.
- Number of exceedences of the one-hour ozone national air quality standard.
- Change in emissions by source category for criteria pollutants.

Other Outcome Measures

- Percentage of inspected air pollution sites/facilities in significant compliance.
- Percentage of inspected asbestos projects in significant compliance
- Percentage of inspected natural wood waste recycling facilities in significant compliance.
- Percentage of inspected scrap tire hauling, collection, storage, processing facilities in significant compliance.

Output Measures

- Number of air pollution permits issued.
- Number of air toxics reviews conducted as part of the permitting process.
- Number of air complaint responses.
- Number of natural wood waste complaint responses.
- Number of scrap tire complaint responses.
- Number of asbestos project inspections, audits, and spot checks conducted.
- Number of VEIP inspection station audits.
- Number of VEIP repair facility audits.

- Number of air pollution inspections, audits, and spot checks.
- Number of air pollution enforcement actions initiated.
- Number of natural wood waste permits issued, inspections conducted, and enforcement actions initiated.
- Number of scrap tire permits issued, inspections conducted, and enforcement actions initiated.
- Number of asbestos project enforcement actions initiated.
- Number of asbestos licenses issued.
- Number of asbestos occupation accreditations issued.
- Number of asbestos training courses audited.
- Number of State employees engaged in asbestos-related work that were trained.
- Number of asbestos abatement projects in State buildings that presented an imminent health hazard that were addressed.

Input Measures

- Number of high-impact air pollution sources.
- Tons per year emissions reported for criteria air pollutants for high-impact air pollution sources.
- Total number of air pollution sites/facilities.
- Total number of asbestos projects subject to federal regulation that were reported.
- Total number of natural wood waste sites/facilities.
- Total number of scrap tire sites/facilities.

Quality Measures

- Percentage of asbestos training courses audited that meet standards.
- Total number of air pollution compliance assistance actions rendered.
- Total number of asbestos project compliance assistance actions rendered.
- Total number of natural wood waste compliance assistance actions rendered.
- Total number of scrap tire compliance assistance actions rendered.
- Percentage of asbestos projects subject to federal regulation and for which notification was received that were inspected.

Efficiency Measures

- Number of significant violations resolved per total number of significant violations.
- State program expenditures per capita to ensure the air is safe to breathe.

How These Measures Relate to Proposal Evaluation Elements:

MDE believes that our performance measures satisfy all the evaluation elements in that they are:

- Relevant to important goals and objectives. These measures are all related to a specified goal.
- Transparent or comprehensible to important users. A review of the measures reveals that their logic is obvious and they are easy to understand. We have a

system in place to continuously improve these measures and are open to revising them if they prove too difficult to understand.

- Credible, based on accurate and timely supporting data. The accurate and timely portion of this must be supported by an effective means of data assimilation. Credibility is the element that we are presently building.
- Feasible, capable of being implemented without costs disproportionate to their value. MDE has made a decision to move the whole agency forward on a schedule with in built flexibility to adjust for unanticipated set backs. Consequently the first view of the size of this task seems overwhelming. However, we are working in logical phases by starting with core data that supports all programs and then moving to more complex program specific data. At the present time, i.e. before the completion of the database, data assimilation tasks are being done manually. Those programs which get their performance measures up and running are eligible to be brought onto the database sooner than the programs which do not complete their performance measurement tasks. In this way we create an incentive for devising feasible measures.
- Functional, when this plan comes together the accountability will be immediate and the ability to adjust and strategize will be powerful.

III. SCHEDULE FOR ACCOMPLISHMENT OF PROJECT MILESTONES

This is a draft proposal that is confidential and in negotiation and subject to change or modification.

Tasks	Duration	Start	End
MDE Enterprise System	450 days	1 June 99	31 Aug 99
Project Kick Off Meeting	1 day	1 June 99	1 June 99
Project Management Tasks	450 days		
Develop Project Plan	30 days	1 June 99	30 June 99
Update Project Plan	As required	As required	As required
Submit Status Reports	Monthly	15th ea. mo.	15th ea. mo.
Phase I – Preliminary Implementation Of *Fleet OM&M Manager System*	60 days	1 June 99	30 July 99
Phase II – Requirements Gap Analysis	120 days	1 July 99	31 Oct 99
Phase III – System Specification Modifications and Design Specs	195 days	15 Sept 99	31 March 00
Phase IV – Execution and Deployment of Required Modifications	180 days	1 March 00	31 Aug 00
Phase V – Maintenance & Support	360 days	1 Sept 00	31 August 01

IV. ITEMIZED BUDGET FOR TOTAL PROJECT COSTS AND AMOUNT REQUESTED

The OECA grant would further leverage both state and EPA revenues identified for this enterprise data system. There are core elements (which are not currently supported) related to implementing this system which must be supported in order to effect a successful implementation, and achieve the related performance measurement goals.

Data Quality -- $150,000 – Contractual Services
The Department needs to validate existing data using standard QA/QC procedures, and reconcile and transfer data from over 150 permitting and compliance systems throughout the Department into the enterprise system. The transfer of existing historical data is essential in some programs to their daily business operations, data analysis, and reporting requirements. The validation of this historical data plays a key role in the department's performance measurement system.

Data transfer and cleanup would occur during Phases II through IV.

Data Velocity -- $250,000 – Contractual Services
The Department needs to enhance the enterprise system architecture through the development and implementation of remote access applications. Whereby, data can be easily exchanged across the state, i.e., regional offices, providing inspection and enforcement personnel access to the Department's enterprise data, necessary for their daily business operations. This will enforce and validate future data collection efforts as they relate to program quality assurance procedures.

Remote connectivity would occur during Phase V.

Data Utility -- $100,000 – Contractual Services
The Department needs to attain assistance in the further development and refinement of statistical methodologies and procedures used in evaluating enforcement data and ultimately reporting progress to our stakeholders. This effort would be directed at specifically developing statistically valid samples for inspections and calculating associated compliance rates for sectors and facilities, and ultimately arriving at a method a measuring facility performance.

Refinement of statistical methodologies would occur during Phases II and III.

In addition, MDE is fully committed to supporting all data sharing and data standards goals set through the State EPA Information Management Workgroup.

These standards will foster the sharing of important enforcement and performance data with EPA and across states.

MDE anticipates spending upward of $3 million over the next 3 years to develop a comprehensive permitting, compliance, and enforcement enterprise system that will track, analyze, and report core performance data. The Department is requesting that EPA continue to support the efforts that are captured in our One Stop grant proposal and our Managing for Results FY 2000 Work Plan (Goal #13).

ATTACHMENTS:

1. Fiscal Year 1997 and 1998 Enforcement and Compliance Report
2. Fiscal Year 2000 Managing Maryland for Results Work Plan
3. One Stop Grant 120 Action Plan
4. MDE Enterprise System Requirements

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